GEOTHERMICS

International Journal of Geothermal Research and its Applications

VOLUME CONTENTS AND AUTHOR INDEX

VOLUME 23 (1994)

PERGAMON

GEOTHERMICS

International Journal of Geothermal Research and its Applications

IIRG

Founded by the late Professor Ezio Tongiorgi

Editor
E. BARBIER — National Research Council—International Institute for Geothermal Research, Pisa, Italy

Associate Editor for the Americas
M. J. LIPPMANN—Lawrence Berkeley Laboratory, University of California, Berkeley, CA 94720, U.S.A.

Managing Editor
MARY H. DICKSON (Editorial Office in Pisa, see below)

Production Editor
MICHELE HARMAN (Elsevier Science Ltd, Oxford, see below)

Editorial Board
Terms expire December 1994
S. INGEBRITSEN—U.S. Geological Survey, Menlo Park, California, U.S.A.
D. NIEVA GÓMEZ—Instituto de Investigaciones Eléctricas, Cuernavaca, Morelos, Mexico
L. RYBACH—Institute of Geophysics, ETH—Federal Institute of Technology, Zurich, Switzerland
B. STEINGRÍMSSON—National Energy Authority, Reykjavik, Iceland

Terms expire December 1995
D. H. FREESTON—Geothermal Institute, University of Auckland, New Zealand
R. HARRISON—Renewable Energy Centre, University of Sunderland, Sunderland, U.K.
J. N. MOORE—Earth Science Laboratory, University of Utah Research Institute, Salt Lake City, Utah, U.S.A.
A. H. TRUESDELL—Menlo Park, California, U.S.A.

Terms expire December 1996
P. R. L. BROWNE—Geothermal Institute, University of Auckland, Auckland, New Zealand
M. HANANO—JMC Geothermal Engineering Co. Ltd, Morioka, Japan
M. P. HOCHSTEIN—Geothermal Institute, University of Auckland, Auckland, New Zealand
N. E. GOLDSTEIN—Earth Science Division, Lawrence Berkeley Laboratory, Berkeley, California, U.S.A.

Regional Advisory Board
N. BEREDJICK — Natural Resources and Energy Division, DTCD, United Nations, New York, U.S.A.
V. CERMAK — Geophysical Institute, Czech Academy of Sciences, Prague, Czech Republic
L. D'ANDIGNÉ DE ASIS — Division of Earth Sciences, UNESCO, Paris, France
D. BENOIT — President, Geothermal Resources Council, Davis, California, U.S.A.
V. I. KONONOV — Laboratory of Geothermics, Institute of Geology, Academy of Sciences, Moscow, Russia
J. COMBS — President, International Geothermal Association, Auckland, New Zealand
F. MONGELLI — Institute of Geodesy and Geophysics of the University, Bari, Italy
P. SQUARCI — International Institute for Geothermal Research, Pisa, Italy
L. TAFFI — CNR National Geological Advisory Committee, Rome, Italy
TONG WEI — Geology Dept, Geothermal Research Section, University of Peking, Beijing, People's Republic of China
F. YAMAGUCHI—Japan Geothermal Energy Association, Tokyo, Japan

Copyright © 1995 CNR—Istituto Internazionale per le Ricerche Geotermiche

Published 6 issues/annum in February, April, June, August, October and December

Subscription Rates
Annual Institutional Subscription Rates 1995; North, Central and South America, U.S.$500.00, Rest of World £335.00. Sterling prices exclude VAT. Non-VAT registered customers in the European Community will be charged the appropriate VAT in addition to the price listed. Prices include postage and insurance and are subject to change without notice.

Publishing, Subscription and Advertising Offices
The Americas: Pergamon Press Inc., 660 White Plains Road, Tarrytown, NY 10591-5153, U.S.A. [Tel. (914) 524-9200; Fax (914) 333-2444].
Rest of the World: Elsevier Science Ltd, The Boulevard, Langford Lane, Kidlington, Oxford OX5 1GB, U.K. [Tel. (0865) 843000; Fax (0865) 843969; Telex 83177 PERGAP G].

Editorial Addresses

The Americas: Dr M. J. Lippmann, Lawrence Berkeley Laboratory, University of California, Berkeley, CA 94720, U.S.A. [Tel. (510) 486-5035; Fax (510) 486-5686]

Rest of the World: Dr E. Barbier, International Institute for Geothermal Research, 2 Piazza Solferino, 56126 Pisa, Italy [Tel. (50) 41503; Fax (50) 47055; Cable: Geotermico Pisa; Telex 502020 IRGCNR I].

CONTENTS

NUMBER 1

1 Obituary: Henry J. Ramey, Jr (1925–1993)

C. H. Lai, G. S. Bodvarsson and A. H. Truesdell — 3 Modeling studies of heat transfer and phase distribution in two-phase geothermal reservoirs

F. D'Amore and L. Bolognesi — 21 Isotopic evidence for a magmatic contribution to fluids of the geothermal systems of Larderello, Italy, and The Geysers, California

P. Andreussi, A. Minervini, A. Paglianti and F. Sabatelli — 33 Two-phase flow of brine in long pipelines: analysis of field experiments

J. A. Lesser — 43 Estimating the economic impacts of geothermal resource development

R. Harrison — 61 The design and economics of European geothermal heating installations

I New Patents

NUMBER 2

H. G. Richards, R. H. Parker, A. S. P. Green, R. H. Jones, J. D. M. Nicholls, D. A. C. Nicol, M. M. Randall, S. Richards, R. C. Stewart and J. Willis-Richards — 73 The performance and characteristics of the experimental hot dry rock geothermal reservoir at Rosemanowes, Cornwall (1985–1988)

J. J. Zucca, L. J. Hutchings and P. W. Kasameyer — 111 Seismic velocity and attenuation structure of The Geysers geothermal field, California

E. U. Antúnez, G. S. Bodvarsson and M. A. Walters — 127 Numerical simulation study of the Northwest Geysers geothermal field, a case study of the Coldwater Creek steamfield

F. Mongelli — 143 Theoretical analysis of heat transfer in semi-infinite aquifer

E. Greber — 151 Deep circulation of CO_2-rich palaeowaters in a seismically active zone (Kuzuluk/Adapazari, northwestern Turkey)

I. B. Fridleifsson and D. H. Freeston — 175 Geothermal energy research and development

I New Patents

NUMBER 3

J. Zhao — 215 — Geothermal testing and measurements of rock and rock fractures

P. Andreussi, R. Corsi, M. Guidi and L. Marini — 233 — Theoretical prediction of physical and chemical characteristics of the "first drop" of condensate from superheated geothermal steam. Implications for corrosion and scaling in turbines

S. Vitolo and M. L. Cialdella — 257 — Silica separation from reinjection brines at Monte Amiata geothermal plants, Italy

E. Lagios, A. Tzanis, N. Delibasis, J. Drakopoulos and G. K. J. Dawes — 267 — Geothermal exploration of Kos island, Greece: magnetotelluric and microseismicity studies

F. D'Amore, G. Gianelli and E. Corazza — 283 — The geothermal area of El Pilar–Casanay, State of Sucre, Venezuela. Geochemical exploration and model

H. Bril, B. Velde, A. Meunier and A. Iqdari — 305 — Effects of the "Pays de Bray" fault on fluid paleocirculations in the Paris basin Dogger reservoir, France

NUMBER 4

F. Ascencio, A. García, J. Rivera and V. Arellano — 317 — Estimation of undisturbed formation temperatures under spherical–radial heat flow conditions

E. Petrucci, G. Gianelli, M. Puxeddu and P. Iacumin — 327 — An oxygen isotope study of silicates in the Larderello geothermal field, Italy

A. Barelli, C. G. Carsana, C. Lombardi and L. Maran — 339 — Prediction of geothermal well pressure and temperature profiles

E. Hurtig, S. Großwig, M. Jobmann, K. Kühn and P. Marschall — 355 — Fibre-optic temperature measurements in shallow boreholes: experimental application for fluid logging

F. W. Jones and F. Pascal — 365 — Numerical model calculations of the effects of grain sizes and orientations on the thermal conductivities of composites

NUMBER 5/6

Special Issue: Waimangu, Waiotapu, and Waikite Geothermal Systems, New Zealand

T. HUNT and R. GLOVER	373	Preface
	375	List of external reviewers
R. G. ALLIS	377	Foreword
T. M. HUNT, R. B. GLOVER and C. P. WOOD	379	Waimangu, Waiotapu, and Waikite geothermal systems, New Zealand: background and history
C. P. WOOD	401	Aspects of the geology of Waimangu, Waiotapu, Waikite and Reporoa geothermal systems, Taupo Volcanic Zone, New Zealand
G. F. RISK, T. G. CALDWELL and H. M. BIBBY	423	Deep resistivity surveys in the Waiotapu–Waikite–Reporoa region, New Zealand
H. M. BIBBY, S. L. BENNIE, V. M. STAGPOOLE and T. G. CALDWELL	445	Resistivity structure of the Waimangu, Waiotapu, Waikite and Reporoa geothermal areas, New Zealand
G. W. GRINDLEY, T. C. MUMME and B. P. KOHN	473	Stratigraphy, paleomagnetism, geochronology and structure of silicic volcanic rocks, Waiotapu/Paeroa Range area, New Zealand
V. M. STAGPOOLE	501	Interpretation of refraction seismic and gravity data across the eastern margin of the Taupo Volcanic Zone, New Zealand
M. A. MONGILLO	511	Aerial thermal infrared mapping of the Waimangu–Waiotapu geothermal region, New Zealand
P. C. WHITEFORD and D. J. GRAHAM	527	Conductive heat flow through the sediments in Lake Rotomahana, New Zealand
S. F. SIMMONS, M. K. STEWART, B. W. ROBINSON and R. B. GLOVER	539	The chemical and isotopic compositions of thermal waters at Waimangu, New Zealand
B. J. SCOTT	555	Cyclic activity in the crater lakes of Waimangu hydrothermal system, New Zealand
T. M. HUNT and T. TOSHA	573	Precise gravity measurements at Inferno Crater, Waimangu, New Zealand

R. B. Glover, M. K. Stewart, M. E. Crump, L. E. Klyen and S. F. Simmons — 583 The relationship of chemical parameters to the cyclic behaviour of Inferno Crater Lake, Waimangu, New Zealand

W. F. Giggenbach, D. S. Sheppard, B. W. Robinson, M. K. Stewart and G. L. Lyon — 599 Geochemical structure and position of the Waiotapu geothermal field, New Zealand

G. Bignall and P. R. L. Browne — 645 Surface hydrothermal alteration and evolution of the Te Kopia Thermal Area, New Zealand

659 Editors' Acknowledgements

661 Corrigendum

I Volume Contents and Author Index, Volume 23, 1994

AUTHOR INDEX

Andreussi, P. 33, 233
Antúnez, E. U. 127
Arellano, V. 317
Ascencio, F. 317

Barelli, A. 339
Bennie, S. L. 445
Bibby, H. M. 423, 445
Bignall, G. 645
Bodvarsson, G. S. 3, 127
Bolognesi, L. 21
Bril, H. 305
Browne, P. R. L. 645

Caldwell, T. G. 423, 445
Carsana, C. G. 339
Cialdella, M. L. 257
Corazza, E. 283
Corsi, R. 233
Crump, M. E. 583

D'Amore, F. 21, 283
Dawes, G. K. J. 267
Delibasis, N. 267
Drakopoulos, J. 267

Freeston, D. H. 175
Fridleifsson, I. B. 175

García, A. 317
Gianelli, G. 283, 327
Giggenbach, W. F. 599
Glover, R. B. 379, 539, 583
Graham, D. J. 527
Greber, E. 151
Green, A. S. P. 73
Grindley, G. W. 473
Großwig, S. 355
Guidi, M. 233

Harrison, R. 61
Hunt, T. M. 379, 573
Hurtig, E. 355
Hutchings, L. J. 111

Iacumin, P. 327
Iqdari, A. 305

Jobmann, M. 355
Jones, F. W. 365
Jones, R. H. 73

Kasameyer, P. W. 111
Klyen, L. E. 583
Kohn, B. P. 473
Kühn, K. 355

Lagios, E. 267
Lai, C. H. 3
Lesser, J. A. 43
Lombardi, C. 339
Lyon, G. L. 599

Maran, L. 339
Marini, L. 233
Marschall, P. 355
Meunier, A. 305
Minervini, A. 33
Mongelli, F. 143
Mongillo, M. A. 511
Mumme, T. C. 473

Nicholls, J. D. M. 73
Nicol, D. A. C. 73

Paglianti, A. 33
Parker, R. H. 73
Pascal, F. 365
Petrucci, E. 327
Puxeddu, M. 327

Randall, M. M. 73
Richards, H. G. 73
Richards, S. 73
Risk, G. F. 423
Rivera, J. 317
Robinson, B. W. 539, 599

Sabatelli, F. 33
Scott, B. J. 555
Sheppard, D. S. 599
Simmons, S. F. 539, 583
Stagpoole, V. M. 445, 501
Stewart, M. K. 539, 583, 599
Stewart, R. C. 73

Tosha, T. 573
Truesdell, A. H. 3
Tzanis, A. 267

Velde, B. 305
Vitolo. S. 257

Walters, M. A. 127
Whiteford, P. C. 527
Willis-Richards, J. 73
Wood, C. P. 379, 401

Zhao Jian 215
Zucca, J J. 111